CHAPTER 2

QUICK START

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Getting to Know Windows

DirectSOFT 6 Programming Software runs under 32-bit or 64-bit Windows operating systems (XP/Vista/7/8/8.1). It's a good idea to understand the operating system for your computer.

Recommended System Requirements

Check the following system requirements when choosing your PC configuration.

- Pentium/Celeron CPU, 1 Ghz or greater
- Windows XP(Home and Pro)/Vista/7/8/8.1, 32-bit or 64-bit versions.

  NO DOS, OS/2, Macintosh, XP 64-bit, Linux or Unix versions or 16-bit versions
- 512Mb RAM
- 50Mb available hard drive disk space.
- CD-ROM or DVD drive
- At least one unused serial communications port, USB with USB-to-serial adapter, 10base-T or 10/100 Ethernet Network Card when using Hx-ECOM or Hx-ECOM100
- 1024 x 768 resolution color SVGA monitor

Power Supply

It is recommended that the computer which ***Direct***SOFT 6 operates on has some form of power surge protection. A quality surge protector will protect your computer from most surges and spikes; however, an uninterruptible power supply (UPS) will provide the best protection. A UPS provides isolation between the AC power source and the computer. It also has a battery backup for blackout and brownout conditions.

*Direct*SOFT 6 Package Contents

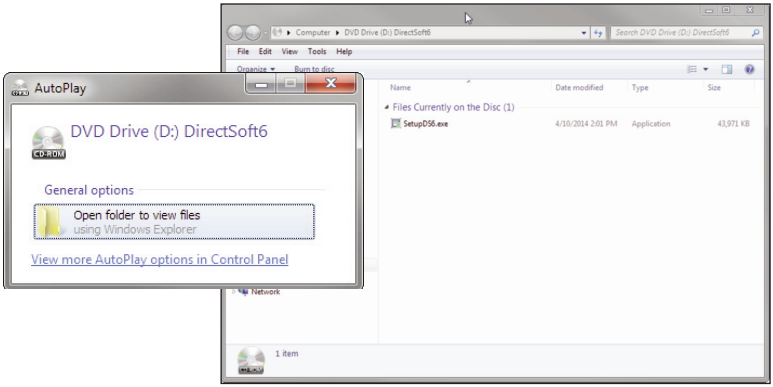
Now is the time to review the contents of your ***Direct***SOFT 6 software package. you should have the following items:

- CD ROM
- Programming User Manual

Installation of *Direct*SOFT 6

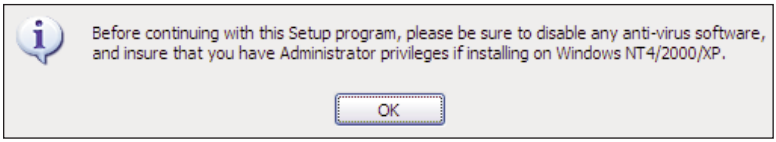
Step 1: Load the CD

DirectSOFT 6 Programming Software for ***Direct***LOGIC PLCs is available on the AutomationDirect CD. To install ***Direct***SOFT 6, insert the AutomationDirect CD into your PC's CD drive. Select "Open folder.." when autoplay dialog appears, or navigate to the CD drive, and select the SetupDS6 executable.



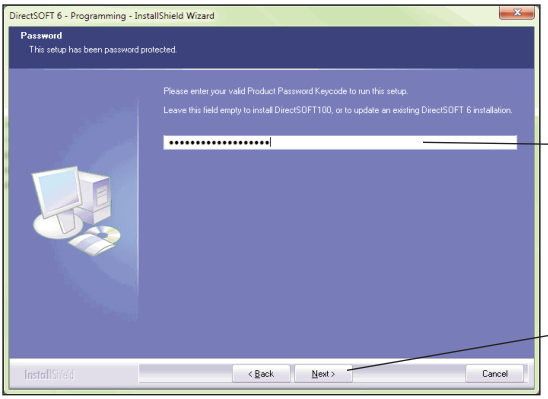
Step 2: Exit all other Windows Applications

The dialog below issues a reminder to exit all other Window applications. If you are unsure of the programs that may be running, open the Task Manager by pressing the Ctrl-ALT-Delete keys at the same time. Close any opened applications by selecting them and clicking on the **Close** button of the Task Manager. Click on the **OK** button to proceed with the installation.


Before continuing with this Setup program, please be sure to disable any anti-virus software, and insure that you have Administrator privileges if installing on Windows NT4/2000/XP.
OK

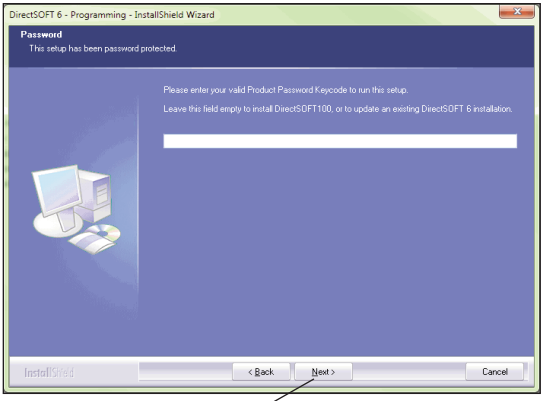
Step 3: Enter the Product Key Code

From this window, enter the **Product Key** that was e-mailed to you (or the one who purchased the software), or phone 1-800-633-0405 and get the Product Key from either sales or technical support if you did not receive it. This software package is protected by this Product Key code. Only licensed users that have a Product Key code may install the software. Enter the Product Key using all caps and any dashes shown then click the **Next** button.


DirectSOFT 6 - Programming - InstallShield Wizard
Password
This setup has been password protected.
Please enter your valid Product Password Keycode to run this setup.
Leave this field empty to install DirectSOFT100, or to update an existing DirectSOFT 6 installation.
InstallShield
< Back
Next >
Cancel
Enter Product Key here
Then click on the Next button

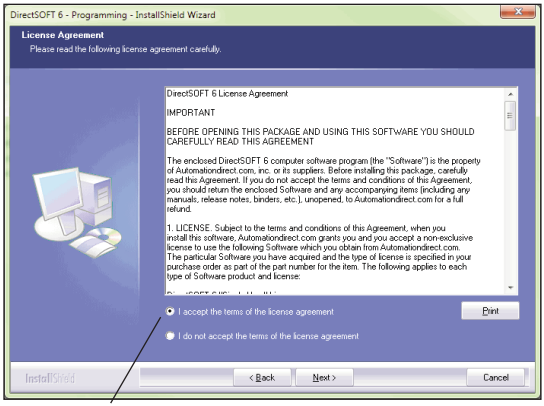
Step 4: Installing an Upgrade

If you are installing the ***Direct***SOFT 6 upgrade version, setup will search your PC to look for a previous version of ***Direct***SOFT. If a previous ***Direct***SOFT version is not found, you will be prompted to enter a valid product key code from a previous version of ***Direct***SOFT.


DirectSOFT 6 - Programming - InstallShield Wizard
Password
This setup has been password protected.
Please enter your valid Product Password Keycode to run this setup.
Leave this field empty to install DirectSOFT100, or to update an existing DirectSOFT 6 installation.
InstallShield
< Back
Next >
Cancel
Click here to proceed with the DirectSOFT 6 installation

Step 5: License Agreement

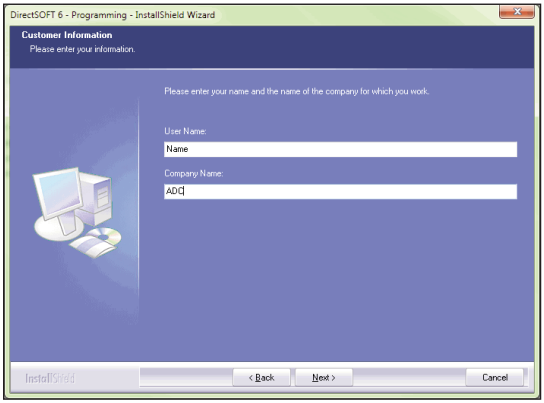
The wizard displays the “Software License Agreement” shown below. Read the agreement and select **I accept the terms of the license agreement**. Click **Next** to continue with the installation. If you do not accept the license agreement, cancel the installation.


DirectSOFT 6 - Programming - InstallShield Wizard
License Agreement
Please read the following license agreement carefully.
DirectSOFT 6 License Agreement
IMPORTANT
BEFORE OPENING THIS PACKAGE AND USING THIS SOFTWARE YOU SHOULD CAREFULLY READ THIS AGREEMENT
The enclosed DirectSOFT 6 computer software program (the "Software") is the property of Automationdirect.com, inc. or its suppliers. Before installing this package, carefully read this Agreement. If you do not accept the terms and conditions of this Agreement, you should return the enclosed Software and any accompanying items (including any manuals, release notes, binders, etc.), unopened, to Automationdirect.com for a full refund.
1. LICENSE. Subject to the terms and conditions of this Agreement, when you install this software, Automationdirect.com grants you and you accept a non-exclusive license to use the following Software which you obtain from Automationdirect.com. The particular Software you have acquired and the type of license is specified in your purchase order as part of the part number for the item. The following applies to each type of Software product and license:
I accept the terms of the license agreement
I do not accept the terms of the license agreement
Print
InstallShield
< Back
Next >
Cancel

Click here if you agree with the License Agreement’s terms.

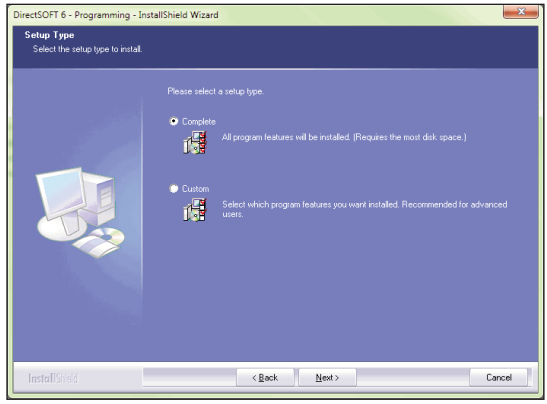
Step 6: Enter the Customer Information

The “Customer Info” window requests the user name and company. Enter the name of the person assigned to the ***Direct***SOFT 6 Programming Software and the name of your company. Click the **Next** button to continue with the ***Direct***SOFT 6 installation.



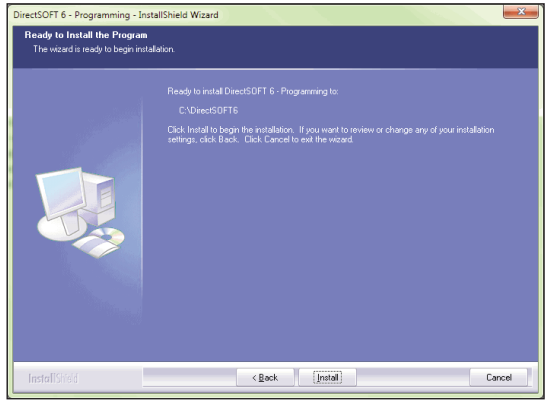
Step 7: Select the Type of Installation

The wizard now displays the “Setup Type” window. This window allows you to select either the “Complete” or the “Custom” type of installation. Complete is the most common selection. Custom allows you to select the optional components you want. It is recommended that you select Complete for your ***Direct***SOFT 6 installation. Click on the **Next** button to proceed with installation.

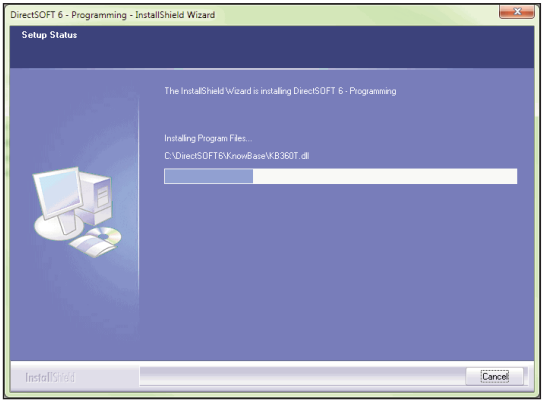

DirectSOFT 6 - Programming - InstallShield Wizard
Setup Type
Select the setup type to install.
Please select a setup type.
Complete
All program features will be installed. (Requires the most disk space.)
Custom
Select which program features you want installed. Recommended for advanced users.
InstallShield
< Back
Next >
Cancel

Step 8: Ready to Install

The wizard continues with the “Ready to Install the Program” window appears. Verify the folder name where the ***Direct***SOFT 6 files are to be stored. If this is the desired folder, click on the **Next** button to continue with the installation.

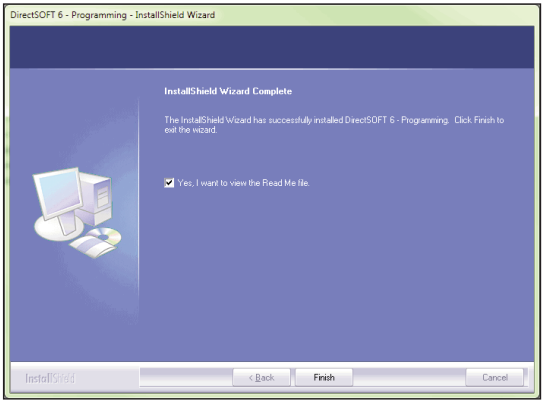

DirectSOFT 6 - Programming - InstallShield Wizard
Ready to Install the Program
The wizard is ready to begin installation.
Ready to install DirectSOFT 6 - Programming to:
C:\DirectSOFT6
Click Install to begin the installation. If you want to review or change any of your installation settings, click Back. Click Cancel to exit the wizard.
InstallShield
< Back
Install
Cancel

The following window lets you know that the ***Direct***SOFT 6 Programming Software is being installed onto your computer.



Step 9: Installation is Complete

The wizard now displays the “InstallShield Wizard Complete” window shown below. Click on the **Finish** button.


DirectSOFT 6 - Programming - InstallShield Wizard
InstallShield Wizard Complete
The InstallShield Wizard has successfully installed DirectSOFT 6 - Programming. Click Finish to exit the wizard.
Yes, I want to view the Read Me file.
InstallShield
< Back
Finish
Cancel

If an Upgrade

If an older ***Direct***SOFT version is found during the installation, you will be prompted to make ***Direct***SOFT 6 the default projects folder. You will then be asked if you want the existing projects copied to the ***Direct***SOFT 6 projects folder.

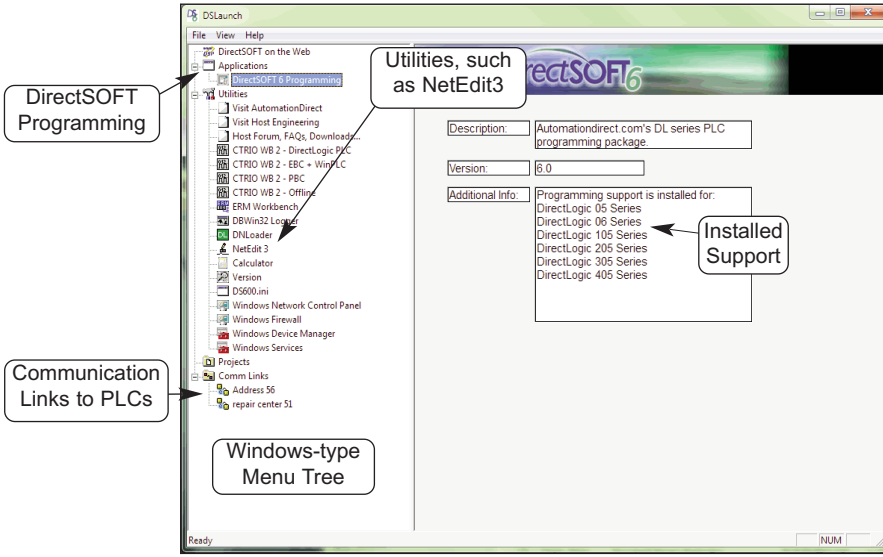
Getting Started

Before beginning to edit a program, you need to open ***Direct***SOFT 6. Click on the ***Direct***SOFT 6 icon located on your desktop screen to open the DSLaunch window. You can also click on **Start** located in the left-hand corner of the computer monitor. Now select **Programs**, find ***Direct***SOFT 6, then select **DSLAUNCH 6** in the drop-down window. If your computer is connected to the Internet, the following **DSLaunch** window will appear with **What's New**. What's New will have useful information for the user from the **AutomationDirect** website.

DirectSOFT on the Web
DSLaunch
File View Help
DirectSOFT on the Web
Applications
DirectSOFT 6 Programming
Utilities
Visit AutomationDirect
Visit Host Engineering
Host Forum, FAQs, Downloads...
CTRIO WB 2 - DirectLogic PLC
CTRIO WB 2 - EBC + WinPLC
CTRIO WB 2 - PBC
CTRIO WB 2 - Offline
ERM Workbench
DBWin32 Logger
DNLoader
NetEdit 3
Calculator
Version
DS600.ini
Windows Network Control Panel
Windows Firewall
Windows Device Manager
Windows Services
Projects
c:\users\bdehner\desktop\test.prj
Comm Links
DSCBL 06
DirectSOFT on the web
Tech Tips
Windows 7
Windows 8
Windows OS Compatibility - DirectSOFT and Do-more Designer - With Microsoft's recent release of the Windows 8 operating system, we have received several inquiries asking if DirectSOFT Programming software and Do-more Designer are compatible with this new operating system. The short answer is YES, the current version of DirectSOFT and all versions of Do-more Designer work on all versions of this new operating system (except Windows 8 RT of course) with no known compatibility issues. For more information about previous versions of DirectSOFT and operating system compatibility please consult FAQ0140 which contains a compatibility matrix that cross references all of the released versions of DirectSOFT and Do-more Designer with all of the Windows operating systems that support them.
Product Support Forum - Who doesn't need more support these days? - uh, wait, that doesn't sound right - Who doesn't need more technical support options these days? When things in the automation world begin to go awry, you can never have too many options for assistance. So we invite you to stop by the forum to register and become an active member of our product support infrastructure.
You can always find all of the FAQs for all of our products at http://www.hostenq.com/faqfiles/faqs.htm
Done
NUM

If your computer is not connected to the Internet at the time of launching ***Direct***SOFT 6, the DSLaunch window will display a message stating that the website is not available. This is okay. It isn't necessary to be on the Internet each time that DSLaunch is opened. Our website can be accessed anytime the computer is connected to the Internet by double-clicking ***Direct***SOFT on the Web.

The main DSLaunch window is opened by selecting ***Direct***SOFT 6 **Programming** located in the **Applications** section of the Menu Tree. The launch window will then appear as follows.



From this window, additional utilities, such as, NetEdit, CTRIO WB, etc., can all be launched from one central location. This is also used to create and manage PLC programs and the communications links between your personal computer and the PLC.

Notice the different areas which are pointed out in the launch window.

NOTE: *Also see* ***DSLAUNCH*** *comments in Chapter 3.*

If you have been using previous versions of ***Direct***SOFT Programming Software, you will see that the DSLaunch window looks much like it has for many years. Descriptions of the various sections are as follows:

- **Applications** – These are the applications currently installed in ***Direct***SOFT 6. They are visible in the Menu tree under the **Applications** folder/icon and are linked to applications that have been designed for launch from ***Direct***SOFT 6. For example, to create a new program, double-click the ***Direct*****SOFT 6 Programming** name.
- **Utilities** – Several utilities are available under this folder/icon. If you have already installed available utilities, such as, NetEdit, CTRIO Workbench, etc., these will be shown here. Shortcuts to your favorite utilities can also be added by adding them to the Utililities section of the DS600.ini file.
- **Projects** – These are the programs which are created in ***Direct***SOFT 6. A project is the collective name for your program and all of its documentation. When you create a new project or work on an existing project, you will see it listed in the Menu Tree under the **Projects** folder/icon by name. To open an existing project, double-click on the project name. To open a project not listed, right-click on Projects and select Browse to locate the project, then select it.
- **Comm Links** – This is for the communication links used to connect from your PC to one or more of your PLCs. If there were Comm Links existing in your previous version of ***Direct***SOFT, they will appear here. New Comm Links will also appear here after they are setup.

The remainder of this chapter will be devoted to the following:

1. Create a new program.
2. Add some rungs.
3. Document the elements and rungs.
4. Connect to a PLC.
5. Download to a PLC.
6. Monitor the program and change status.

Welcome to *Direct*SOFT100

NOTE: *If you have purchased the full version of* ***Direct****SOFT 6, go to page 2-14, Begin Editing a Program.*

If you have loaded the free version of ***Direct***SOFT 6, you should know what you can and cannot do with the software.

What is *Direct*SOFT100?

The ***Direct***SOFT100 software is provided as a solution for small applications and to assist in your decision to purchase the full ***Direct***SOFT 6 programming software. There are, of course, limitations to the use of ***Direct***SOFT100. The following is what you can and cannot do with the software:

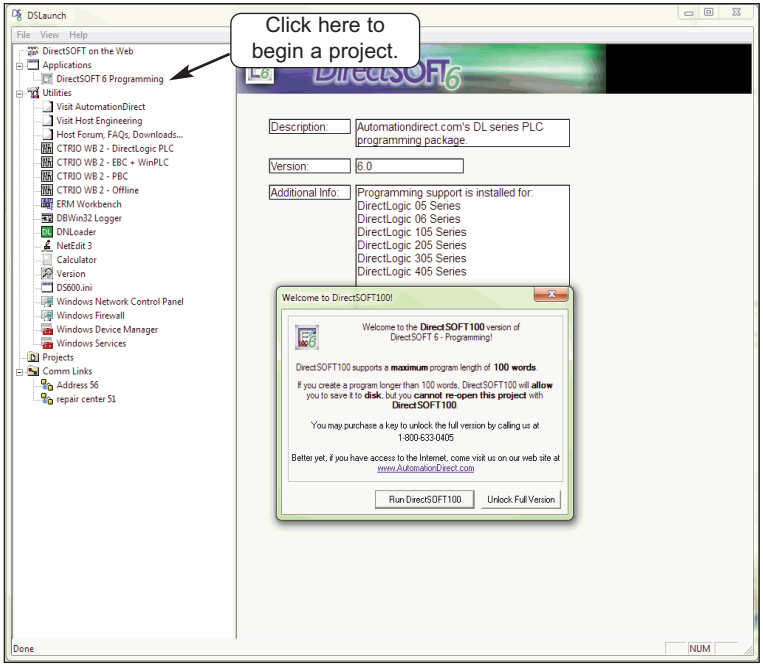
- You CAN create a program from scratch, and it can be as large as you want it to be.
- You CAN save programs larger than 100 words to disk, but you CANNOT write it to the PLC.
- You CAN convert ***Direct***SOFT100 version to the full version if you purchase the key and enter the key code in the ***Direct***SOFT100 dialog (it may appear often) or in the **Help > About** dialog.
- You CANNOT download a program to a PLC larger than 100 words.
- You CANNOT open an offline project larger than 100 words.
- You CANNOT open a program in the PLC larger than 100 words.

There are no other limitations. ***Direct***SOFT100 is able to use all of the features described in this manual. Many instances of ***Direct***SOFT100 can be running at one time and monitor any number of data points. ***Direct***SOFT100 is basically the same, functionally, as ***Direct***SOFT 6 (full version) except the ladder program needs to remain within 100 words.

Welcome to DirectSOFT100!
Welcome to the DirectSOFT100 version of DirectSOFT 6 - Programming!
DirectSOFT100 supports a maximum program length of 100 words.
If you create a program longer than 100 words, DirectSOFT100 will allow you to save it to disk, but you cannot re-open this project with DirectSOFT100.
You may purchase a key to unlock the full version by calling us at 1-800-633-0405
Better yet, if you have access to the Internet, come visit us on our web site at www.AutomationDirect.com
Run DirectSOFT100
Unlock Full Version

Using *Direct*SOFT100?

To begin a project, double-click on ***Direct*SOFT 6 Programming** under Applications on the menu tree. The following **Welcome to *Direct*SOFT100** window will appear.


Click here to begin a project.
DSLaunch
File View Help
DirectSOFT on the Web
Applications
DirectSOFT 6 Programming
Utilities
Visit AutomationDirect
Visit Host Engineering
Host Forum, FAQs, Downloads...
CTRIO WB 2 - DirectLogic PLC
CTRIO WB 2 - EBC + WinPLC
CTRIO WB 2 - PBC
CTRIO WB 2 - Offline
ERM Workbench
DBWin32 Logger
DNLoader
NetEdit 3
Calculator
Version
DS600.ini
Windows Network Control Panel
Windows Firewall
Windows Device Manager
Windows Services
Projects
Comm Links
Address 56
repair center 51
Description:
Automationdirect.com's DL series PLC programming package.
Version:
6.0
Additional Info:
Programming support is installed for:
DirectLogic 05 Series
DirectLogic 06 Series
DirectLogic 105 Series
DirectLogic 205 Series
DirectLogic 305 Series
DirectLogic 405 Series
Welcome to DirectSOFT100!
Welcome to the DirectSOFT100 version of DirectSOFT 6 - Programming!
DirectSOFT100 supports a maximum program length of 100 words.
If you create a program longer than 100 words, DirectSOFT100 will allow you to save it to disk, but you cannot re-open this project with DirectSOFT100.
You may purchase a key to unlock the full version by calling us at 1-800-633-0405
Better yet, if you have access to the Internet, come visit us on our web site at www.AutomationDirect.com
Run DirectSOFT100
Unlock Full Version
Done
NUM

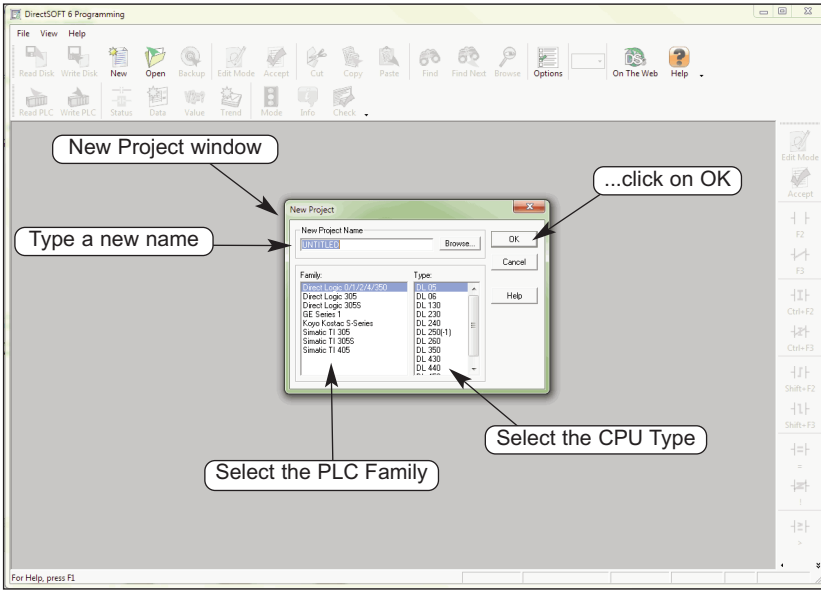
Click on **Run DirectSOFT100** and the **New Project** dialog will open as shown on page 2-14. You can now begin to edit a program following from Step 1.

Begin Editing a Program

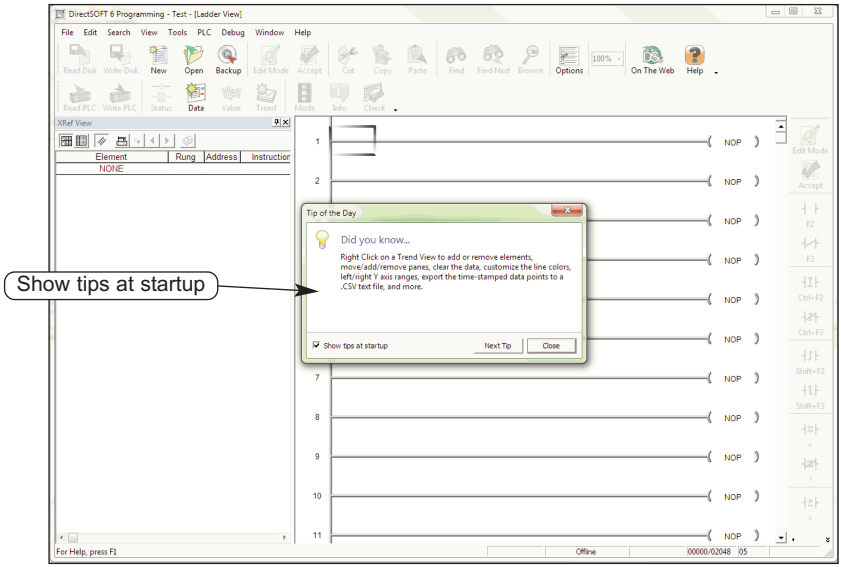
You can now begin editing your program. The following steps will show you the basics of editing with ***Direct***SOFT 6. This will not be an attempt to teach you how to develop a control program, but it will give you the basics to get started using ***Direct***SOFT 6 so that you can edit a program.

Step 1: Start a New Project

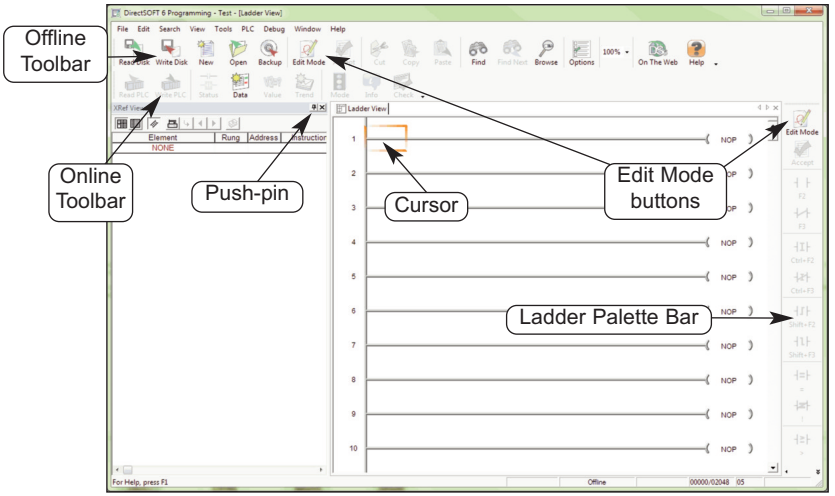
To begin a new project, double-click ***Direct*SOFT 6 Programming** under Applications in the menu tree. The following window will appear. The **New Project** window is used to enter the basic information to begin a new project. Name the new project, then move the cursor to the **Family** area and select the PLC family to match the PLC that you are using. Next, select the CPU type. Once all of the information has been entered, click on **OK**. Keep in mind that the available mnemonics, processing rules and the tool bar characteristics are tailored to the Family and Type selections that you make.



After clicking on **OK**, the next window to appear is the Ladder View with a Tip of the Day dialog box as seen below. The Tip of the Day dialog will appear each time a new project is started, and each time an existing project is opened. If it is not desired to have this dialog "pop-up" as mentioned, simply click off the check mark preceding **"Show tips at startup"**. The tips dialog can always be opened by clicking on **Help > Tip of the day** on the main menu bar. More tips can be read by clicking on the **Next** button. After clicking on the **Close** button the new Program display window will be totally in view.


Show tips at startup
Tip of the Day
Did you know...
Right Click on a Trend View to add or remove elements, move/add/remove panes, clear the data, customize the line colors, left/right Y axis ranges, export the time-stamped data points to a .CSV text file, and more.
Show tips at startup
Next Tip
Close

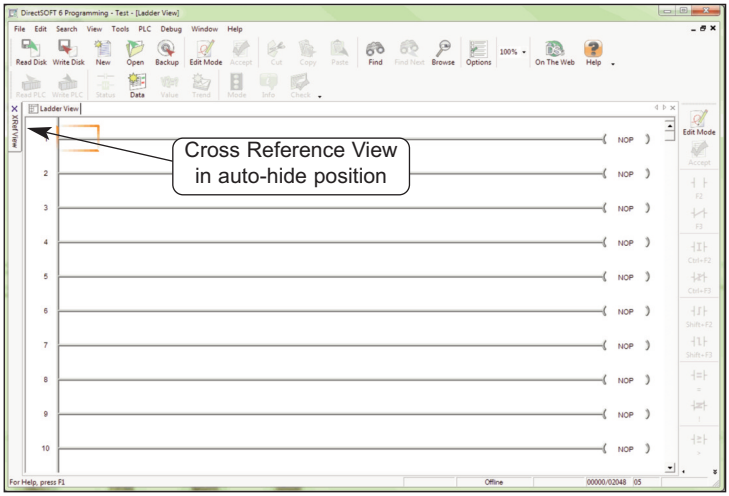
Regular users of ***Direct***SOFT will note that the new programming window looks a bit different than previous ***Direct***SOFT programming software. The "Online" and "Offline" toolbars have the same layout as previous ***Direct***SOFT programming windows but a crisp new look for the button icons. Notice that some of the toolbar icons are grayed-out and some of the icons are not. The available icons in the online toolbar will be visible. As a program is edited, more of the grayed-out icons will become visible. The online toolbar is grayed-out and will remain this way until the PC is connected to the PLC. See Chapter 4 for more toolbar features.



By default, there are two windows that will be in view when a new project is opened. One is the **Cross Reference View** on the left and the other is the **Ladder View** on the right. The Cross Reference View is one of the dockable views in ***Direct***SOFT 6 which also includes Data Views and the Output window. These views can be docked to any edge of the Programming Window or they can be undocked and "float" to any part of the screen, even onto a different display if you have multiple monitors. If the view is docked, you can "auto-hide" the view by clicking on the push-pin in the upper right-hand corner of the view. The view will auto-hide to the left of the Ladder View with the name of the view on the tab. To bring the view from auto-hide, hold the mouse cursor over the name in the tab. If the view is not needed, click on the X located to the right of the push-pin to close the view. See Chapter 7 to learn more about views.

Notice the **Ladder Palette Bar** located to the right of the Ladder View. The element buttons are grayed-out unless the Edit Mode has been activated. To activate the Ladder Palette, click on either **EDIT Mode** button; one is located on the Offline toolbar and one is located at the top of the Ladder Palette. This palette can be repositioned anywhere on the screen by "grabbing" it with the mouse pointer at the top of the palette and dragging it to a new position. The Ladder Palette contains the buttons that access the rung elements and operations commonly used when editing ladder logic programs.

The diagram below shows a newly opened Display window with the Cross Reference View in the auto-hide position and the Ladder View in full view.



It is good practice to leave the Cross Reference View open while editing your program. The rung elements are added to the Cross Reference View as the program is accepted.

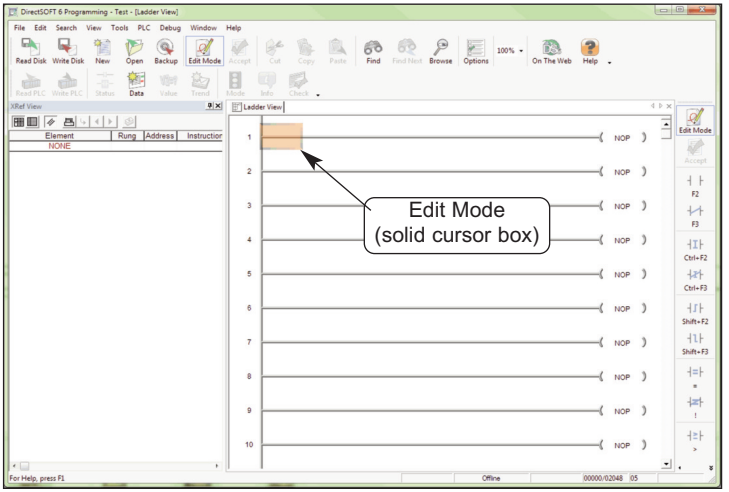
Accepting a program will be discussed later in this chapter.

NOTE: *The Cross Reference View can be retrieved by going to* ***View*** *on the Menu Bar and select it from the drop-down menu, then click on the push-pin to keep it in view.*

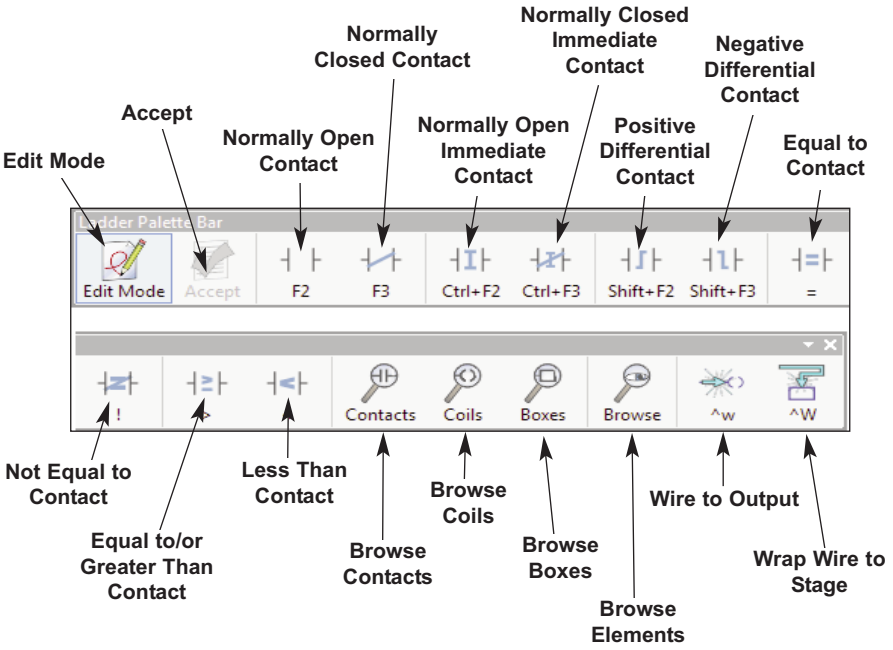
Step 2: Select Edit Mode

The ladder View has two viewing modes; the **Display Mode** and the **Edit Mode**. When a new program or an existing program is opened, the Ladder View will be in the Display Mode which is only a viewing mode. A program cannot be edited in this mode. In order to edit a program, you must be in the Edit Mode. To enable the Edit Mode, either click on the Edit Mode button on the Offline toolbar or click on the Edit Mode button on the Ladder Palette Bar. You will know when the Edit Mode is active when the cursor box becomes solid, a box appears around the Edit Mode buttons and the elements in the Ladder Palette are highlighted (see diagram on the next page).

2



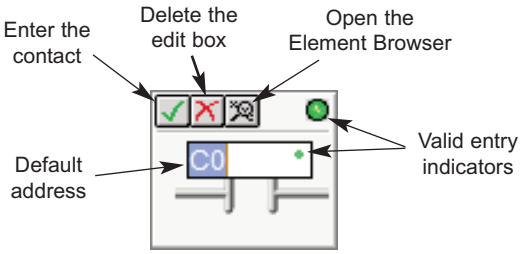
The Ladder Palette (shown below) may not be exactly like the one you have on your computer screen. The elements shown in the palette will depend on which CPU your PLC is using. This example shows the elements common to most of the CPUs.



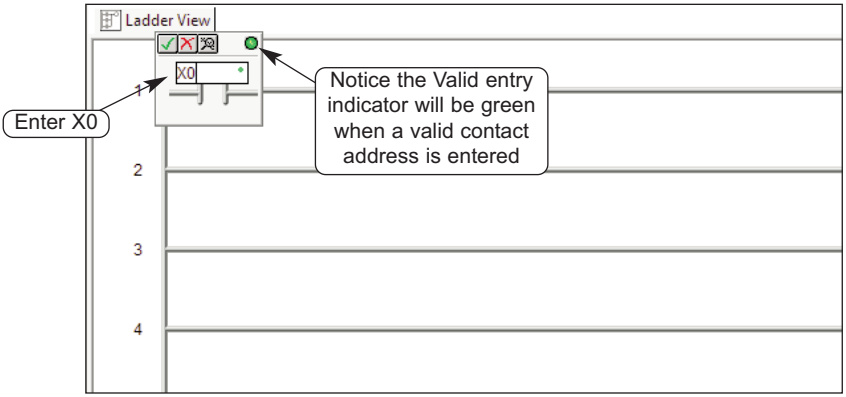
Step 3: Enter an Input Element

Use the Ladder Palette to enter the first instruction of the program. First, click on one of the Edit Mode buttons to begin to edit your program. The rectangular edit cursor will change to a solid color. The edit cursor should be positioned to the far left on Rung 1. Your first entry can be placed here, normally a relay contact or an element. Click on the **Normally Open Contact** symbol on the palette.

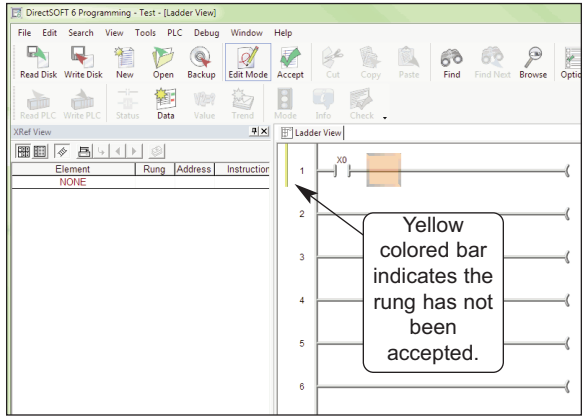
The cursor will change to a box with an open relay contact, a window with the text cursor blinking at the end of address **C0** (highlighted) and green, valid entry, indicators.



If the green dot changes to red, it means that the address is incorrect, not valid or a wrong character. For example, if you typed the letter "**O"** instead of the digit "**0"**, the indicator would turn red and stay red until you correct the mistake. For this example, enter **X0** over C0. The valid entry indicator should be green meaning the address is correct. Now, either click on the check mark (√) or press the **Enter** key.

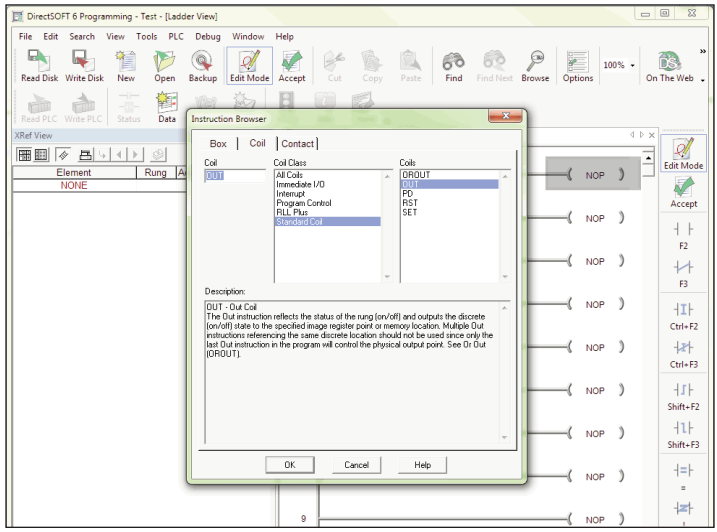


The element will be entered and the cursor will move to the next entry position. A yellow vertical bar will appear to the left of the left of Rung 1. The yellow bar indicates that an instruction (or instructions) has been entered, but the program has not been accepted (compiled).

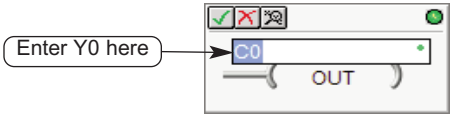


Step 4: Enter an Output Element

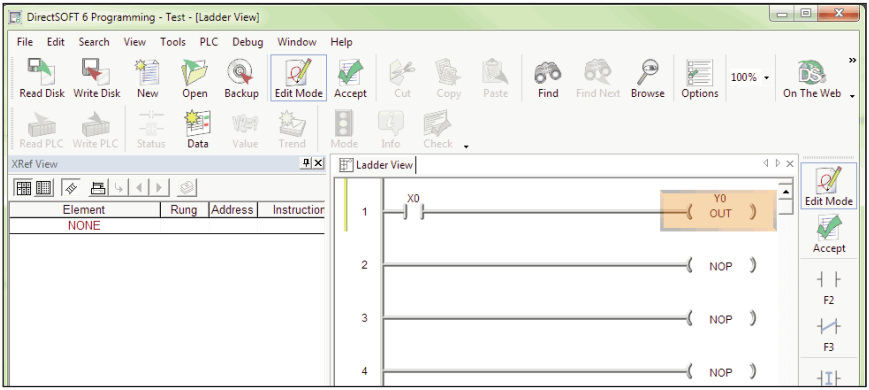
Now, move the cursor to the end of the rung, positioned over the **NOP**. Click on the **Browse Coils** button on the Ladder Palette. The **Instruction Browser** will appear with the **Standard Coil** selected as the default. Click **OK** to enter the standard coil. Keep in mind that one of the other output coils could have been selected.



The Instruction Browser will be replaced with the element entry box. The default address, C0, will be highlighted. Enter **Y0** and notice the valid entry indicator is green for a proper entry. Either click on the (√) or press the **Enter** key to enter the output coil.

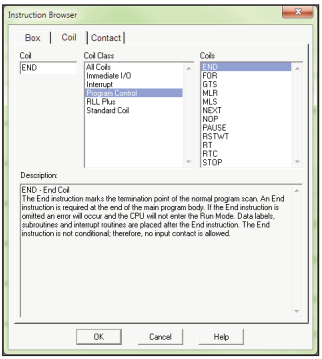


Rung 1 has now been programmed. This rung can be downloaded to the PLC except for one missing rung. All programs must be terminated with an **END Coil** rung.

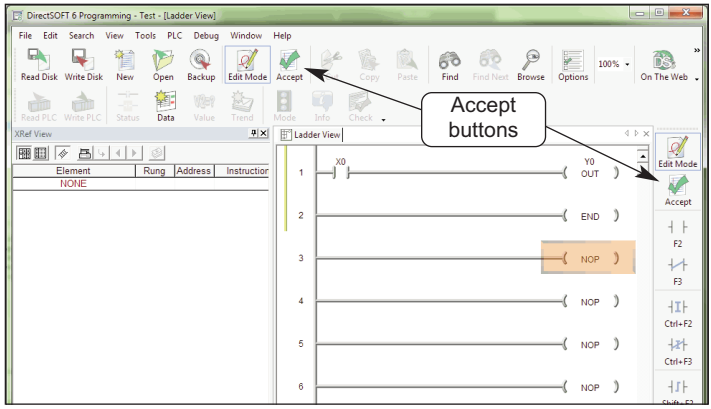

DirectSOFT 6 Programming - Test - [Ladder View]
File Edit Search View Tools PLC Debug Window Help
Read Disk Write Disk New Open Backup Edit Mode Accept Cut Copy Paste Find Find Next Browse Options 100% On The Web
Read PLC Write PLC Status Data Value Trend Mode Info Check
XRef View
Element Rung Address Instruction
NONE
Ladder View
X0
Y0
OUT
NOP
Edit Mode
Accept
F2
F3

Step 5: Enter the End Rung

To program this rung, position the cursor so it is over the **NOP** at the end of Rung 2, and click on the Browse Coils button. The Instruction Browser will appear as shown in the diagram below. This time, select **Program Control** located in the **Coil Class** selection window. Next, select **END** located in the **Coils** selection window. Click on **OK**, then **Enter**.

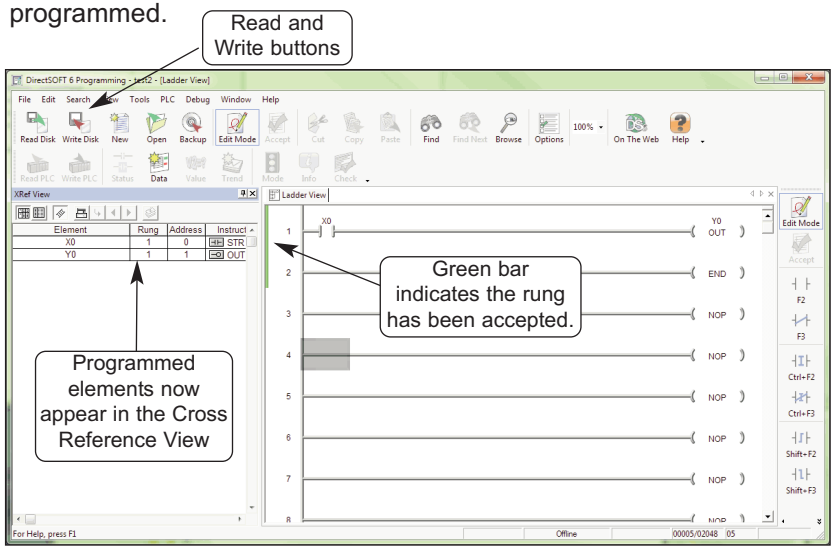


The below diagram shows the two rungs that have been programmed. This is a basic program that can be downloaded to your PLC. Additional rungs can be programmed, but you can go ahead and accept the program



Step 6: Accepting and Saving the Program

The program now needs to be accepted in order to be downloaded to the PLC. As noted in the above diagram, there are two **Accept** buttons. Click on either **Accept** button to compile the program. Once the rungs are accepted with no errors, the yellow bar will change to green, the Accept buttons will be grayed-out and the Cross Reference View now shows the two elements that have been programmed.


Read and Write buttons
Green bar indicates the rung has been accepted.
Programmed elements now appear in the Cross Reference View

Notice that the two **Read** and **Write** buttons located to the left of the Offline toolbar are enabled and no longer grayed-out. The program can now be saved to the PC's disk. To write the program to disk, click on the Write button. It is not necessary to save the program in order to download the program to the PLC, however, it is good practice to save your work as you edit a program. A mistake may be made at times and you may want to restore the program to the state that it was before the mistake was made. If a mistake is made and you want to restore the program, click on the Read button. This will refresh the screen with the previously saved version of your program.

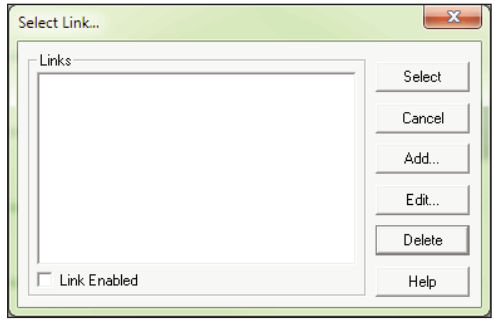
NOTE: *When the program is saved by clicking on Write (only to disk), the ladder program is all that is saved. Once you have edited a program and have included total documentaion, you will want to save all that you have done. This is accomplished by selecting File > Save Project > to disk. You can also click on Backup to accomplish the same thing with the addition of a Backup file. For more detail about documenting and saving the project refer to Chapter 6.*

Establish the Communication Link

In order to download a program to the PLC a communication link must be established. This section will step you through the procedure for setting up the serial port of your PC. Refer to Chapter 9 if you need to create a serial link for a modem, or an Ethernet link. The following procedure will step you through the process of connecting the example program to a PLC.

Connect the PC to the PLC

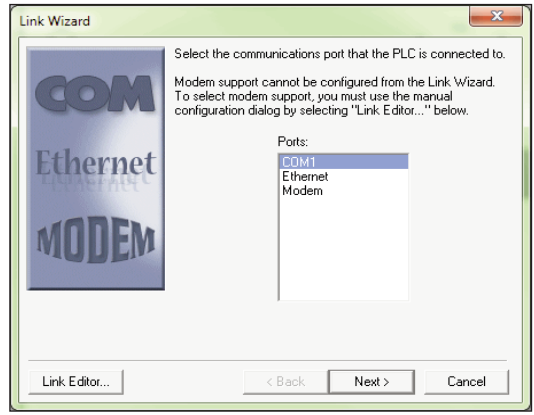
Connect the programming cable from the serial port of the PC to the serial port of the PLC. Turn on your PLC and be sure that the **RUN\TERM\STOP** switch on the PLC is in the **TERM** position. Now, click on **PLC** on the Menu Bar, then select **Connect** from the drop-down menu and the **Select Link** dialog will appear. Since there isn't a link to chose, click on **Add**.



Step 1: Select the Port

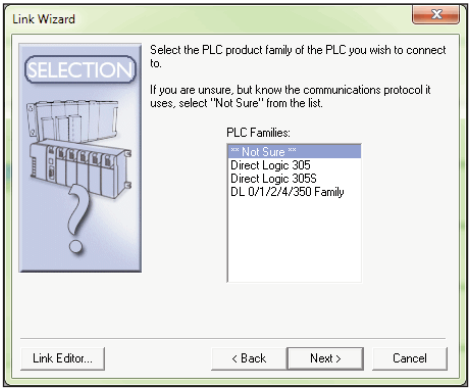
The following Link Wizard dialog will appear showing a list of communication ports. Select the port you will use (commonly COM1) and click **Next**.

DirectSOFT 6 will automatically find any communications ports that are shown in the Windows Device Manager. If a port is not shown please close all ***Direct***SOFT 6 windows and restart the program.



Step 2: Select the PLC

The next window will show a list of **PLC Families.** Select the PLC family by clicking on the appropriate choice. If you are unsure of the PLC family but know which communications protocol to use, select **"Not Sure"**. If you are using a ***Direct***LOGIC compatible PLC, the Link Wizard will try and detect the PLC type automatically. Click **Next** when you are finished.


Link Wizard
SELECTION
Select the PLC product family of the PLC you wish to connect to.
If you are unsure, but know the communications protocol it uses, select "Not Sure" from the list.
PLC Families:
** Not Sure **
Direct Logic 305
Direct Logic 305S
DL 0/1/2/4/350 Family
Link Editor...
< Back
Next >
Cancel

NOTE: *DL 0/1/2/4/350 should be selected for the following PLC families: DL05, DL06, DL105, DL205, D3-350 and DL405.*

Step 3: Choose the Protocol and Node Address

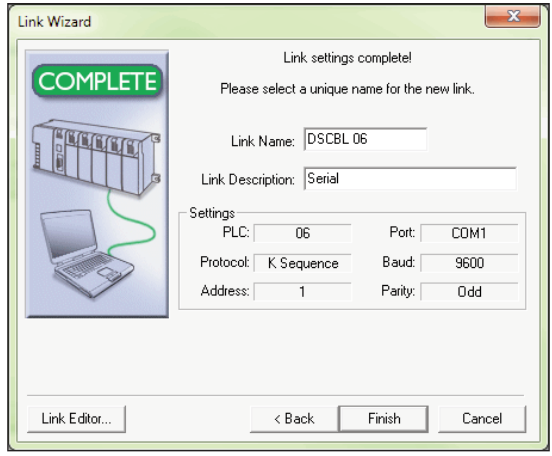
In this step, you will see a choice of either ***Direct***NET or **K-Sequence**. Assuming you have selected the ***Direct***LOGIC PLC family (not the DL305), the default, K-Sequence, will be highlighted. The K-Sequence protocol allows you to perform write operations to individual discrete I/O points and control relays. ***Direct***NET protocol cannot write to individual bit locations. (See Appendix A for a list of protocols available for ***Direct***LOGIC and compatible PLCs).

Link Wizard
DirectNET
K-Sequence
Select the protocol to use in the communications link.
If you selected a PLC family, a valid protocol has been selected for you.
If the selected protocol supports node addressing, enter the station address. If you are unsure, leave the default.
Protocols:
DirectNET
K-Sequence
Address: 1
Link Editor...
< Back
Next >
Cancel

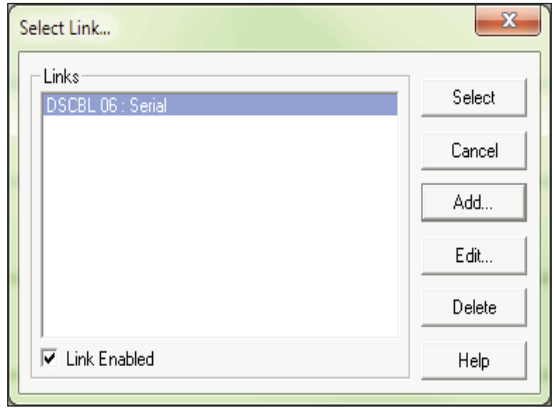
If your PLC has been configured with a node address other than 1, enter that address now. Click **Next** when finished.

Step 4: Name the Link

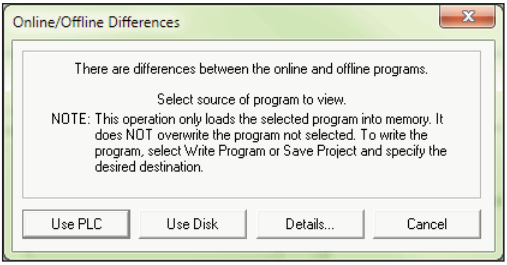
If the Link Wizard is successful in communicating with the PLC, the following window will prompt you to enter a unique link name, and a description of the link if desired. The description field allows 32 characters. Enter the name for the link and description then click **Finish** and the Select Link dialog will appear with the link name listed.



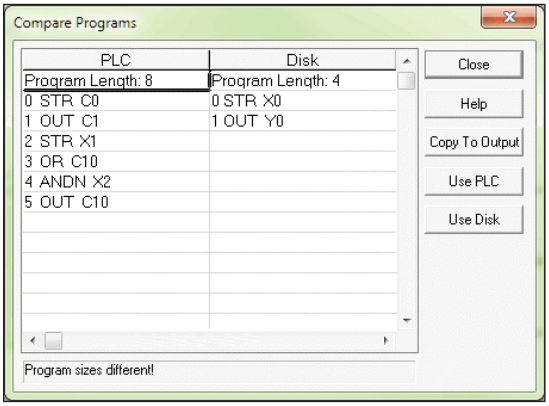
Since the link that was just created is the only one named in the dialog, click on **Select** to initiate connecting to the PLC.



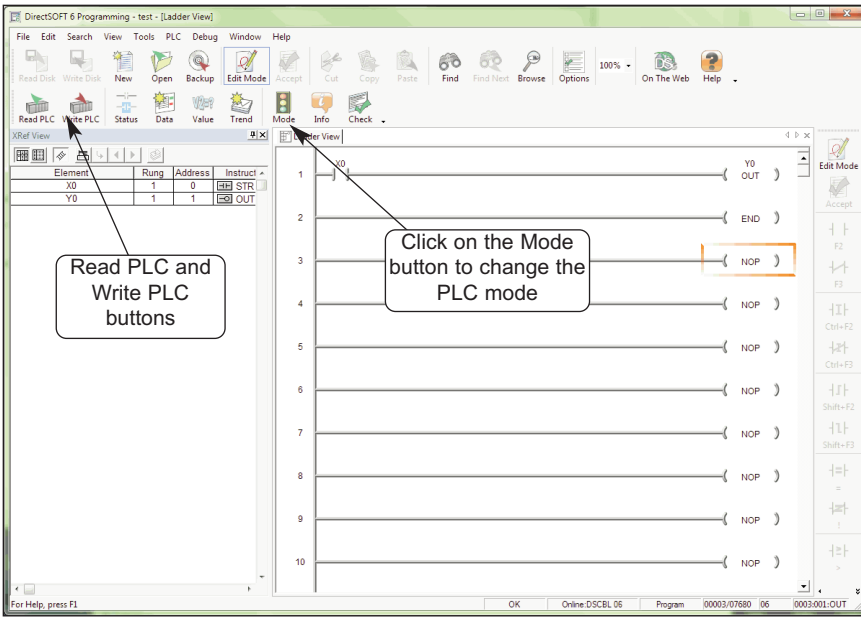
DirectSOFT 6 automatically compares the currently open program with the program stored in the PLC. The following **Online/Offline Differences** dialog box will appear. This dialog asks which copy of


Online/Offline Differences
There are differences between the online and offline programs.
Select source of program to view.
NOTE: This operation only loads the selected program into memory. It does NOT overwrite the program not selected. To write the program, select Write Program or Save Project and specify the desired destination.
Use PLC
Use Disk
Details...
Cancel

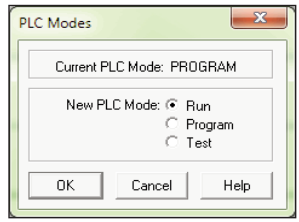
the ladder logic program is to be viewed, the copy in the PLC or the copy on the PC. Since we are dealing with a new program, select the **Use Disk** button. The Use Disk button is used whenever you have made a change to a program in the PC, and you are going online to load it into the PLC. If the **Details** button is pressed, a side-by-side comparison of the program in the PLC and the program on the PC will appear, such as the **Compare Programs** dialog seen below. The program selection can also be made from this dialog.



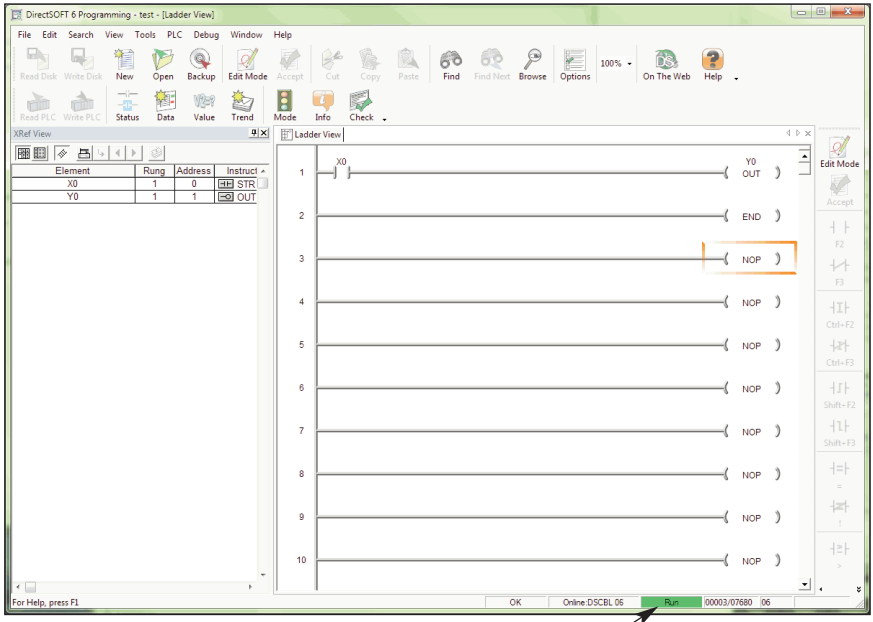
After clicking on the Use Disk button, the programming window will look a bit different. Notice that the icon buttons in the **Online Toolbar** are no longer grayed-out. The indicators at the bottom of the window tell you that the PLC is okay, the PC is online with the PLC and the PLC is in Program Mode. ***At this point the program has not been written to the PLC***. You will also notice the two left most buttons on the Online toolbar (**Read PLC** and **Write PLC**) are highlighted. To write the program to the PLC, select Write PLC. A pop-up indicator will appear to let you know that the program is being written to the PLC.



After the program has been written to the PLC, all that needs to be done is to place the PLC in the RUN Mode. Click on the **Mode** button on the Online toolbar. This will bring the **PLC Modes** dialog window into view. Click on **Run**, then **OK** and the PLC will be in the RUN Mode.

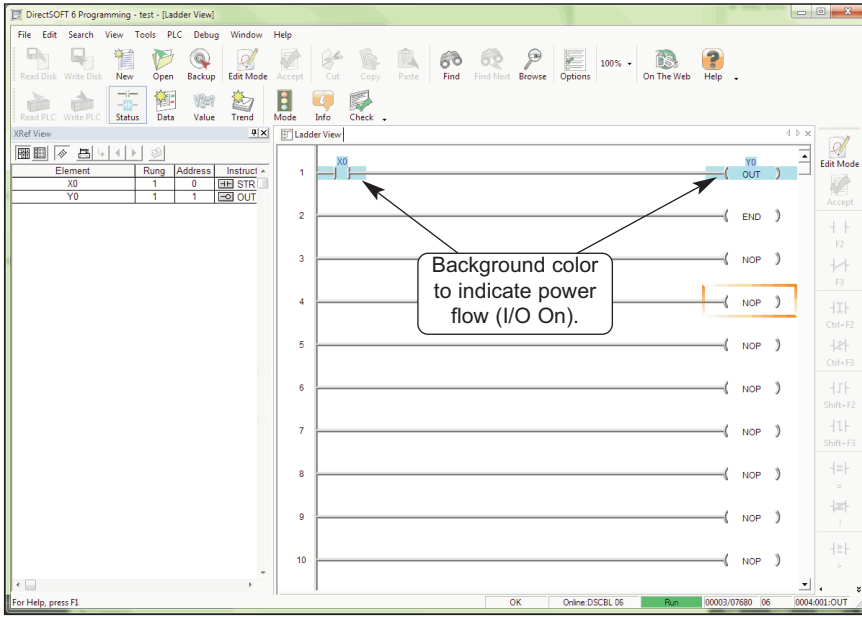


Notice the green indicator at the bottom of the Ladder View. It shows the PLC is now in the Run Mode. How do you know that your program works? The best way is to monitor the program while the PLC is online.



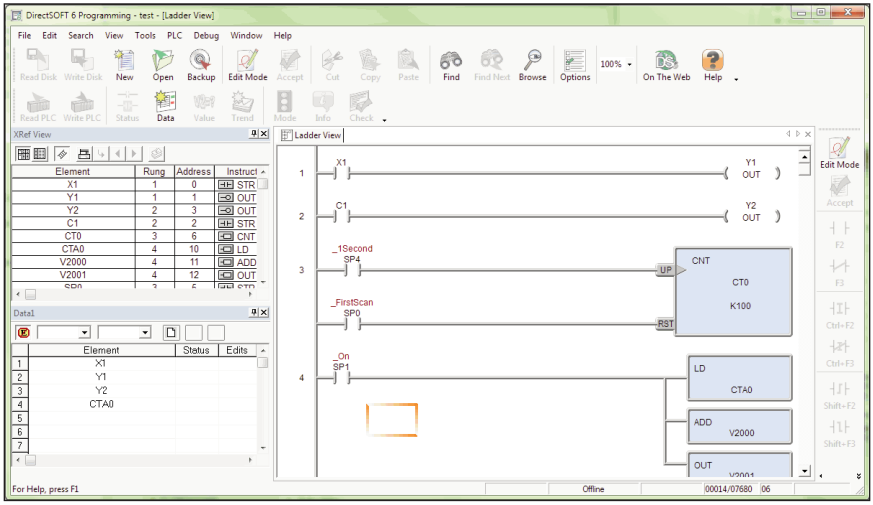
Monitor the Program

There are many things that can be monitored in the relay ladder program by simply clicking on the **Status** button on the online toolbar. The monitor mode can be turned On and Off by clicking on the status button. When in the status mode, the element background will change to blue (by default) to indicate power flow when the input element is turned on. If there is power flow, the output background will also change color.



The program editing and testing is now complete. The example program is the most simple program that can be written. You can add to this program by inserting rungs before the END rung (Rung 2) or by deleting the END rung and continuing to edit additional rungs. Do not forget to end your program with an END rung.

The following picture is an example of how you might continue with your program. Note the Cross Reference View and the Data View. Chapters 9 and 10 will explain how to use these views.



Notes: